

Application of HORIUCHI- Serial No. 10/662,331 -- Atty. Dkt. 008312/0305980

IN THE CLAIMS:

This listing of claims replaces all prior versions, and listings, of the claims in the application:

1. - 7. (Canceled)

8. (New) A paper sheet take-out apparatus, comprising:

a paper feed table adapted to hold a stack of paper sheets;

a take-out rotor, disposed adjacent to the paper feed table, comprising a circumferential surface defining a take-out rotor chamber and a suction port; and

a positioning device, disposed adjacent to the take-out rotor, comprising a positioning device chamber, disposed adjacent to the circumferential surface and opened toward the circumferential surface, and an absorption block disposed adjacent to the take-out rotor and being operatively connected thereto, the absorption block defining an absorption block suction port, wherein, during operation,

the circumferential surface rotates, thereby rotating the suction port,

the take-out rotor chamber is operated under a vacuum, thereby drawing air through the suction port,

when the suction port is in register with the positioning device chamber, air is drawn from the positioning device chamber and the absorption block suction port, thereby causing the absorption block to absorb an uppermost paper sheet from the paper feed table, and

when the suction port is not in register with the positioning device chamber, the absorption block releases the uppermost paper sheet, permitting the uppermost paper sheet to be captured by the suction port so that the uppermost paper sheet may be taken out from the paper feed table by the take-out rotor.

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9. (New) The paper sheet take-out apparatus of claim 8, further comprising:
a connection pipe connecting the absorption block to the positioning device chamber.
10. (New) The paper sheet take-out apparatus of claim 8, wherein the absorption block comprises two absorption blocks, one disposed on either side of the take-out rotor.
11. (New) The paper sheet take-out apparatus of claim 10, further comprising two connection pipes, one connecting each of the two absorption blocks to the positioning device chamber.
12. (New) A paper sheet take-out apparatus, comprising:
a paper feed table adapted to hold a stack of paper sheets;
a take-out rotor, disposed adjacent to the paper feed table, comprising a circumferential surface defining a take-out rotor chamber and a suction port;
a positioning device, disposed adjacent to the take-out rotor, comprising a positioning device chamber, disposed adjacent to the circumferential surface and opened toward the circumferential surface, and an absorption block disposed adjacent to the take-out rotor and being operatively connected thereto, the absorption block defining an absorption block suction port, wherein, during operation,
the circumferential surface rotates, thereby rotating the suction port,
the take-out rotor chamber is operated under a vacuum, thereby drawing air through the suction port,
when the suction port is in register with the positioning device chamber, air is drawn from the positioning device chamber and the absorption block suction port,

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thereby causing the absorption block to absorb an uppermost paper sheet from the paper feed table, and

when the suction port is not in register with the positioning device chamber, the absorption block releases the uppermost paper sheet, permitting the uppermost paper sheet to be captured by the suction port so that the uppermost paper sheet may be taken out from the paper feed table by the take-out rotor; and

a separation roller, disposed adjacent to the take-out rotor, wherein, during operation,

the separation roller rotates oppositely to the take-out rotor,

the separation roller separates any paper sheets attached to the uppermost paper sheet taken out from the paper feed table.

13. (New) The paper sheet take-out apparatus of claim 12, further comprising:

a connection pipe connecting the absorption block to the positioning device chamber.

14. (New) The paper sheet take-out apparatus of claim 12, wherein the absorption block comprises two absorption blocks, one disposed on either side of the take-out rotor.

15. (New) The paper sheet take-out apparatus of claim 14, further comprising two connection pipes, one connecting each of the two absorption blocks to the positioning device chamber.

16. (New) A paper sheet take-out apparatus, comprising:

a paper feed table adapted to hold a stack of paper sheets;

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a take-out rotor, disposed adjacent to the paper feed table, comprising a circumferential surface defining a take-out rotor chamber and a suction port;

a positioning device, disposed adjacent to the take-out rotor, comprising a positioning device chamber, disposed adjacent to the circumferential surface and opened toward the circumferential surface, and an absorption block disposed adjacent to the take-out rotor and operatively connected thereto, the absorption block defining an absorption block suction port, wherein, during operation,

the circumferential surface rotates, thereby rotating the suction port,

the take-out rotor chamber is operated under a vacuum, thereby drawing air through the suction port,

when the suction port is in register with the positioning device chamber, air is drawn from the positioning device chamber and the absorption block suction port, thereby causing the absorption block to absorb an uppermost paper sheet from the paper feed table, and

when the suction port is not in register with the positioning device chamber, the absorption block releases the uppermost paper sheet, permitting the uppermost paper sheet to be captured by the suction port so that the uppermost paper sheet may be taken out from the paper feed table by the take-out rotor; and

an air nozzle disposed adjacent to the take-out rotor, wherein, during operation,

the air nozzle blows air onto the paper sheets, thereby assisting with the taking out of the uppermost paper sheet from the paper feed table.

17. (New) The paper sheet take-out apparatus of claim 16, further comprising:

a connection pipe connecting the absorption block to the positioning device chamber.

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18. (New) The paper sheet take-out apparatus of claim 16, wherein the absorption block comprises two absorption blocks, one disposed on either side of the take-out rotor.

19. (New) The paper sheet take-out apparatus of claim 18, further comprising two connection pipes, one connecting each of the two absorption blocks to the positioning device chamber.

20. (New) The paper sheet take-out apparatus of claim 16, wherein, during operation, when blowing air onto the stack of paper sheets, the air nozzle assists with the separation of the uppermost sheet of paper from the stack of paper sheets.

21. (New) A paper sheet take-out apparatus, comprising:

a paper feed table adapted to hold a stack of paper sheets;

a vacuum source;

a take-out rotor, disposed adjacent the paper feed table and operatively connected to the vacuum source, the take-out rotor comprising a circumferential surface defining a take-out rotor chamber and a suction port, wherein, during operation, the circumferential surface and the suction port rotate;

a positioning device comprising a rotary valve, operatively connected to the vacuum source and disposed adjacent to the take-out rotor, and an absorption block disposed adjacent to the take-out rotor and being operatively connected to the rotary valve, the absorption block defining an absorption block suction port, wherein, during operation,

the rotary valve rotates,

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during at least a portion of the rotary valve's rotation, the rotary valve permits air to be drawn through the absorption block suction port, thereby causing the absorption block to absorb an uppermost paper sheet from the paper feed table, and

during at least another portion of the rotary valve's rotation, the vacuum is disconnected from the absorption block, permitting the absorption block to release the uppermost paper sheet, thereby permitting the uppermost paper sheet to be captured by the suction port so that the uppermost paper sheet may be taken out from the paper feed table by the take-out rotor.

22. (New) The paper sheet take-out apparatus of claim 21, further comprising:
a connection pipe connecting the absorption block to the rotary valve.

23. (New) The paper sheet take-out apparatus of claim 21, wherein the absorption block comprises two absorption blocks, one disposed one either side of the take-out rotor.

24. (New) The paper sheet take-out apparatus of claim 21, further comprising two connection pipes, one connecting each of the two absorption blocks to the rotary valve.

25. (New) The paper sheet take-out apparatus of claim 21, wherein the rotary valve further comprises a valve cover surrounding a rotary valve circumferential surface, the rotary valve circumferential surface defining a groove therein, wherein, during operation, the groove connects the absorption block to the vacuum source so that the absorption valve may absorb the uppermost paper sheet.